Further, since the new Art Gallery takes up nearly all the frontage of the Royal College of Science, the extension of that building, instead of being opposite, is to be built about 100 yards away on the opposite side of Exhibition Road, exactly over the projected railway. It is true the railway is postponed for this year, but that is no guarantee that it will not be proposed again.

Mr. Goschen appears to have given in to a caprice of an unknown donor without having any notion of the effect of his action. But if this be so, why does not Mr. Goschen abolish the Royal College of Science and the Science and Art Department altogether? This would be more statesmanlike than omitting to ask the opinions of people who are paid to advise on such matters. Can Mr. Goschen be of the same opinion as another great official who maintained that, even if it were conceded that there should be national collections of physical-science objects, as there are of pictures, books, beasts, birds, and the like, still little space would be required, "because there was no instrument a man of science used which could not be put into a hat"?

Certainly, if the absurd scheme sketched in Mr. Goschen's answer is carried out, the intelligent foreigner will have a good time. He will have to determine whether English statesmanship has succeeded best in putting a physical laboratory over a railway which will prevent nine-tenths of the instruments being used, or in sandwiching a building devoted to art between the two halves of a science school.

NOTES.

THE third session of the Australasian Association for the Advancement of Science was held in Christchurch, New Zealand, and began on January 15, 1891. Sir James Hector presided. The meeting was a successful one, the attendance being about 470, and the number of papers read 74. Prof. Goodale, of Harvard University, represented the American Association, but no member of the British Association attended from England. A revised code of laws was adopted for confirmation at the next session. The evening lectures were: (1) "The Glaciers of the Tasman Valley," by G. E. Mannering; (2) "Oysters and Oyster-culture in Australasia," by W. Saville Kent; and (3) "A Short History of Vocal Music," by G. F. Tendall. Ten Research Committees were appointed to report on different subjects to the next meeting, and a grant of £25 was made towards measuring the rate of motion of the New Zealand glaciers. As great inconvenience is often felt from the want of a special name for the sea between New Zealand and Australia, a recommendation was adopted that the Lords of the Admiralty be requested to name this sea the Tasman Sea. The Committee also recommended the appointment, by the British and American Associations, of a conjoint Committee to define the terms of general importance in biology; and that the Little Barrier Island north of New Zealand, and Resolution Island in Dusky Sound, be set apart as reserves, where the native fauna and flora of New Zealand may be preserved from destruction. The next session will be held at Hobart, Tasmania, with Sir Robert Hamilton, Governor of the Colony, as President.

THE Vatican Observatory, which, according to a circular letter from Father Denza, the Director, "now revives under the protection of His Holiness the Pope Leo XIII.," is bestirring itself to come into closer communication with other scientific establishments, especially by way of the exchange of publications.

THE half-yearly general meeting of the Scottish Meteorological Society was held in Edinburgh yesterday. The Report from the Council of the Society was presented, and the following papers were read: on the winter of 1890–91, by Dr. Buchan; silver thaw at the Ben Nevis Observatory, by R. C. Mossman.

THE Shaen Wing of Bedford College for Women, York Place, was opened by the Empress Frederick on Tuesday. On entering the College, the Empress was received by the visitor, Mr. N. Story Maskelyne, and the Chairman of Council, Dr. W. J. Russell. The ceremony took place in the large lecture-room, where there were present, among many others, Mrs. Shaen, Miss E. A. Shaen, Miss E. Shaen, Sir Henry Roscoe, Sir Lyon Playfair, General Donnelly, and Dr. Gladstone. Her Majesty having ascended the daïs, Mr. Maskelyne read an address, in the course of which he said:—"The literary and the art divisions of the College having been sufficiently provided with the necessary space and appointments, an addition to the buildings of the College for the teaching of science became imperative. This has been achieved, and laboratories for complete instruction in chemistry and the several branches of physics have been built, and in part equipped. This addition has been called the Shaen wing, in order to connect permanently with the College the name of one who was always interested in its welfare, and who for 20 years had served on the Council, being elected Chairman of that body in 1880, an office which he held until his death. The sciences, with their vast influence on the one hand as intellectual triumphs, and on the other as mighty means for the material prosperity of the human race, are, and will be for ever, among the great monuments of the Victorian era. It is an encouragement for all interested in the higher training of women throughout the Empire and that of our kinsfolk in Germany to feel that the heart of the Royal race of England is with them in the effort to make this higher training a heritage of our women as well as of our men." The Empress spent some time in the building after the ceremony was over, and expressed herself as greatly pleased with the College and the work it is doing.

LAST week, at the monthly general meeting of the Zoological Society, it was announced that in recognition of the effective protection accorded for sixty years to the Great Skua (*Stercorarius catarrhætes*) at two of its three British breeding stations—namely, in the island of Unst, by the late Dr. Laurence Edmondston, and other members of the same family, and in the island of Foula, by the late Dr. Scott, of Melby, and his son, Mr. Robert Scott—the silver medal of the Society had been awarded to Mrs. Edmondston, of Buness House, as representative of that family, and to Mr. Robert Scott, of Melby. The medals will be delivered to the medallists or their representatives after the close of the anniversary meeting on April 29 next.

THE following are the lecture arrangements at the Royal Institution after Easter:—Mr. J. Scott Keltie, three lectures on the geography of Africa, with special reference to the exploration, commercial development, and political partition of the continent; Dr. E. E. Klein, three lectures on Bacteria, their nature and functions (the Tyndall Lectures); Mr. William Archer, four lectures on four stages of stage history (the Betterton, the Cibber, the Garrick, and the Kemble periods); Prof. Dewar, six lectures on recent spectroscopic investigations; Dr. A. C. Mackenzie, four lectures on the orchestra considered in connection with the development of the overture; Prof. Silvanus P. Thompson, four lectures on the dynamo; Mr. H. Graham Harris, three lectures on the artificial production of cold; Prof. A. H. Church, three lectures on the scientific study of decorative colour. The Friday evening meetings will be resumed on April 10, when a discourse will be given by Sir William Thomson, on electric and magnetic screening; succeeding discourses will probably be given by Prof. A. W. Rücker, the Rev. Canon Ainger, Mr. J. E. Harting, Prof. W. Ramsay, Prof. G. D. Liveing, Prof. J. A. Ewing, Dr. David Gill, Prof. Harold Dixon, and other gentlemen.

THE fourth annual exhibition of the Photographic Society of Philadelphia is to be opened on May 25. One of the three medals is to be for scientific or technical photography.

AT the request of the Minister of Education, Mr. C. Todd, the Government Astronomer for South Australia, has published the results of his weather forecasts for the year 1890, showing that, out of 305 forecasts issued, 250, or 82 per cent., were verified, and 13 per cent. were partially verified; an amount of success which must be considered highly satisfactory. Mr. Wragge has also sent forecasts from Brisbane with a percentage of success amounting to 55, which, considering that his information cannot be so good as that of the local office in South Australia, may be regarded as a creditable success. But, as pointed out, such a double system of forecasting can only lead to occasional conflicting reports, in addition to which, it is contrary to the principle laid down by the Meteorological Conference held in Melbourne in 1888, that forecasts should be issued for a particular colony only by the local authorities.

THE United States National Museum lately received from Dr. W. L. Abbott a large zoological collection from the vicinity of Mount Kilimanjaro, East Africa. The collection includes about ninety skins of mammals, and an equal number of skulls, representing about thirty-eight species. A description of two of the species, an antelope and a tree-coney, which had apparently not been described before, is given by Mr. F. W. True in the Proceeedings of the United States National Museum, and has been separately printed.

MR. F. W. TRUE was requested in 1886, by Prof. Baird, to investigate and report upon the porpoise fishery carried on at Hatteras, North Carolina. With the industrial aspects of the subject he has dealt in the *Bulletin* of the United States Fish Commission; and now, in the Proceedings of the United States National Museum, he has brought together some interesting notes regarding the habits and structure of porpoises. The species captured at Hatteras is *Tursiops tursio* (Bonnaterre). The fishermen informed Mr. True that the young porpoises remained near their mothers when the latter were entangled in the nets, as sometimes happens. He himself saw this in the case of one female which became entangled near the beach. He did not, however, find the young porpoise among those captured. It probably escaped by diving under the net, as the adult porpoises often do. Mr. True was informed that the mothers helped their young in their efforts to breathe, by bearing them up to the surface of the water on their "flippers," or otherwise. The spiracle, or blow-hole, appears to be a sensitive part of the head. When Mr. True touched it with his hand, the porpoises invariably showed signs of discomfort by lashing the tail violently.

THE Smithsonian Institution has reprinted from the Report of the U.S. National Museum for 1887-88 an excellent account of the coast Indians of Southern Alaska and Northern British Columbia, by Mr. Albert P. Niblack. Among the subjects dealt with in this treatise are regulative organization, mutilations, food, land-works, arts and industries, mortuary customs, feasts, dances, and ceremonies.

M. LIÉVIN COPPIN, director of the Brussels *Économiste*, describes (in an article quoted in the *Board of Trade Journal*) the new commercial museum at Rome. The museum will include a permanent exhibition of national products and of such products of other countries as are capable of being used in Italy. The exhibition also aims at making known in every place in Italy the useful products of foreign countries, and in foreign countries Italian products, in order to bring about a more active exchange in the commercial movement of the country. A bulletin-catalogue of the museum will be exchanged with the similar publications of other countries, and sent to all the national and international exhibitors, as well as to all chambers of commerce and geographical societies; it will be put on board the vessels of the chief navigation companies, &c. A library will be attached to the museum, and this will contain all the commercial journals of the world, and every variety of information concerning customs tariffs, treaties of commerce, &c.

IN his recent presidential address to the Engineers' Club of St. Louis, Mr. F. E. Nipher mentioned that there were in St. Louis about 50 isolated electric lighting plants, having in all about 27,000 lights, and representing about 2700 horse-power. The cost of these plants was on the average 9 dollars per lamp.

A "CATALOGUE of the Library of the Royal Meteorological Society," compiled by Mr. J. S. Harding, Jun., has been published by Mr. E. Stanford. It is complete to September 1, 1890. The work has been prepared with great care, and will be of essential service to students of meteorology. A preface is contributed by Mr. Symons and Dr. Tripe, the Secretaries of the Society. The Council, they say, are glad to show the Fellows how extensive and valuable the library has become, and how worthy it is of the better accommodation which, it is hoped, will shortly be provided for it. The Council trust that those Fellows who possess, or may be able to procure, meteorological works not yet in the library will do what they can towards its augmentation.

THE first edition of Lord Lilford's "Coloured Figures of the Birds of the British Islands," with the exception of a few of the earlier parts, has all been subscribed for. He is therefore making preparations for the issue of a second edition in every respect equal to the first.

MR. R. H. PORTER has nearly ready "The Birds of Sussex," by Mr. William Borrer. The author claims that the volume will contain an account of all the birds now to be found in the county, with mention and careful verification of the occurrences of the rarer species during the last fifty years.

WE have received from Mr. R. H. Porter Part I. of "Aves Hawaiienses: the Birds of the Sandwich Islands," by Scott B. Wilson, assisted by A. H. Evans. The work promises to be one of great value. It is finely illustrated.

MR. H. LING ROTH has just completed a translation of "Crozet's Voyage to Tasmania, New Zealand, the Ladrone Islands, and the Philippines in the years 1771-72." It will be published shortly by Truslove and Shirley.

MESSRS. WHITTAKER AND CO. have published the sixth edition of Sir David Salomon's practical hand-book on "Electric Light Installations, and the Management of Accumulators." Few changes have been made in the text, but a new chapter, containing a considerable amount of fresh matter, has been added. The same publishers have issued the third edition of "Electric Transmission of Energy," by Mr. Gisbert Kapp. The work has been revised and slightly enlarged.

A NEW edition of Mr. V. T. Murché's "Elementary Text-book of Physiology" has been issued by Messrs. Blackie and Son in their series of science text-books. It is intended for classes studying the first stage of the Science and Art course in physiology. A supplement has been added, dealing with those subjects which are included in the curriculum of the Science Syllabus, but are either not discussed at all in the earlier parts of the book, or are not treated there with sufficient fulness.

WE have received from the publishers, Messrs. Percival and Co., both the elementary and advanced stages of their examination sheets on practical plane and solid geometry, by A. Godfrey Day, and edited by E. J. Cox. The sheets are similar in form and style to the Government Science and Art papers. The questions embrace a complete course on the subject in an intelligent and compact manner, those on each sheet treating of different portions of the syllabus. For students who are reading the subject a second time, they will be especially useful. Teachers will also find them a great help, forming as they do an excellent series of examination papers.

Messrs. G. W. Bacon and Co. have published a "New Geological Map of England and Wales." It is "compiled from the best authorities."

The Royal University of Ireland has published the Examination Papers, 1890, as a supplement to the University Calendar for the year 1891.

An important communication upon the colour and absorption spectrum of liquefied oxygen is made by M. Olszewski to the January number of the *Anzeiger der Akademie der Wissenschaften in Krakau*, and a brief abstract is published in the current number of the *Chemiker Zeitung*. Liquid oxygen has hitherto been described as a colourless liquid. In thin layers it certainly appears to be colourless; but M. Olszewski in the course of his investigation of the absorption spectrum, has obtained a sufficient quantity of the liquid to form a layer thirty millimetres thick, and makes the somewhat unexpected and very important discovery that it possesses a bright blue colour resembling that of the sky. Great precautions were taken to ensure the purity of the oxygen employed, the absence of ozone, which in the liquid state possesses a deep blue colour, being especially ascertained. Carbon dioxide, chlorine, and water vapour were also completely eliminated, the oxygen having been left in contact under pressure with solid caustic potash for a week. In view of this fact that oxygen in the liquid state transmits a preponderating quantity of blue light, M. Olszewski's latest experiments upon its absorption spectrum are specially interesting. In a former paper to the *Monatshefte*, an account of which was given in Nature, vol. xxxvi. p. 42, the absorption spectrum of a layer 7 mm. thick was shown to exhibit two strong dark bands, one in the orange, extending from wave-length 634 to wave-length 622, distinguished for its breadth, and one in the yellow, wave-length 581–573, distinguished for its intensity. When the thickness of the layer was increased to 12 millimetres, two further bands appeared, a very faint one in the green, about wave-length 535, and a somewhat stronger one in the blue, extending between wave-lengths 481 and 478. M. Olszewski now finds that his layer 30 millimetres thick, which possesses the blue colour, exhibits a fifth band in the red, corresponding with Fraunhofer's A. This band is rendered still more apparent when a plate of red glass is held between the source of light and the slit of the spectroscope. It is stronger in intensity than the band of wave-length 535, but fainter than the other three bands. This observation of the coincidence of an oxygen band with the telluric band A of the solar spectrum is of considerable interest. For Ångström, in 1864, expressed the opinion that this band A was not due to the aqueous vapour of the atmosphere; and Egoroff and Janssen, who examined the spectrum of long layers of compressed gaseous oxygen, were of opinion that it was due to oxygen. In conclusion, M. Olszewski remarks that the colour exhibited by his 30-millimetre layer is exactly what one would expect from the nature of its absorption spectrum. He also suggests that the blue colour of the sky may be simply due to the atmospheric oxygen, which in gaseous layers of such extent may exhibit the same colour as when compressed into a few centimetres of liquid. Apart from the discussion of this debatable subject, the fact is certainly of interest to chemists, that ordinary oxygen and its condensation allotrope ozone, when compressed into the liquid state, are thus related as regards colour, the former possessing a bright blue and the latter a deep blue tint.

The additions to the Zoological Society's Gardens during the past week include a Common Otter (*Lutra vulgaris*) from Suffolk, presented by Mr. G. C. Edwardes-Ker; a Common Rhea (*Rhea americana*) from South America, presented by Mrs. Hatfield; a Brazilian Caracara (*Polyborus brasiliensis*) from Brazil, presented by Mr. J. D. Spooner; a Green-cheeked Amazon (*Chrysotis viridigenalis*) from Columbia, presented by Miss Julia Crooke; two Leopard Tortoises (*Testudo pardalis*), five Angulated Tortoises (*Chersina angulata*), a Tuberculated Tortoise (*Homopus femoralis*), four Areolated Tortoises (*Homopus areolatus*), a Hygian Snake (*Elaps hygiæ*), four Smooth-clawed Frogs (*Xenopus lævis*) from South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; a L'huy's Impeyan Pheasant (*Lophophorus l'huysi* ♂) from Western China, deposited; two White-throated Capuchins (*Cebus hypoleucus* ♂ ♂) from Central America, a Coqueral's Lemur (*Cheirogalus coquerali* ♂) from Madagascar, a Small-clawed Otter (*Lutra leptonyx*) from India, a Collared Peccary (*Dicotyles tajaçu* ♂) from South America, two Griffon Vultures (*Gyps fulvus*), a Ruddy Sheldrake (*Tadorna casarca*), European, six Amherst's Pheasants (*Thaumalea amherstiæ* 6 ♂) from Szechuan, China, purchased.

OUR ASTRONOMICAL COLUMN.

Determination of the Constant of Aberration.—*Comptes rendus* for March 16 contains an abstract of a memoir by MM. Lœwy and Puiseux, on determinations of the aberration constant, in which some of the results obtained by M. Lœwy's method are given. Up to 1828, astronomers accepted, as the constant of aberration, values which were comprised between 20″·255 and 20″·708, these being respectively due to Delambre and Bessel. Richardson then obtained the value 20″·446 from a discussion of 4000 observations made with the Greenwich mural circle by his predecessors. In 1843, W. Struve proposed a value almost identical with this, viz. 20″ 445, as the result of a discussion of his careful observations made in the prime vertical. He estimated the probable error as 0″·011, and remarked that he did not think any astronomical element had been determined with so great an accuracy. Struve's work was received with much favour, and appeared to render unnecessary, for a number of years, all researches on the same subject. However, in 1844, Baily deduced 20″·419 as the most probable value, and in after years, Peters, Lundhal, and Lindhagen subjected to a minute discussion all the meridian observations, made at Dorpat and Pulkova, of circumpolar stars. From their researches, a value a little greater than that of Struve was found. Still, when these results were taken in conjunction with the determinations the most worthy of confidence the values 20″·45 and 20″·46 were obtained, thus supporting Struve's work. Nyren, from a discussion of observations made by Struve in the prime vertical as material for the study of nutation, derived the value 20″·43. In 1853, Struve himself proposed to increase his number to 20″·463 with a probable error of 0″·017, but the reasons given to justify the change do not appear to be sufficient. Gylden, Wagner, and Nyren's ulterior observations at Pulkova of circumpolar stars gave the higher value 20″·49. Later, in 1879–82, Nyren made another determination by Struve's method, and used a large number of stars for the investigation. He then found 20″·540 or 20″·517, according to the method of grouping adopted. More recently, in 1885, Küstner, of Berlin Observatory, found 20″·313 by Horrebow and Talcott's method Between these two last numbers, both of which represent a large amount of work executed with much care, the difference is somewhat greater than 0″·2—that is, about twenty times the probable error estimated by Struve in 1843. This seems to indicate that the astronomers have taken a step backwards. MM. Lœwy and Puiseux do not enumerate the work done on the same subject at Greenwich, the Cape, Washington, and other Observatories, but point out that similar sources of error exist in all the methods employed. Lœwy's method, as is now well known, consists in placing before the object-glass of an equatorial a double plane mirror formed by silvering the sides of a prism of glass. This acts as a sort of compass of strictly constant opening, and brings to the eyes rays which make a constant angle with each other. Pairs of stars separated by a wide angle on the celestial sphere, but which together appear in the field of view, can easily be found, and the variations in relative position due to refraction or aberration can be measured micrometrically with great precision. The adoption of this method leads the